

PATENT APPLICATION

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**SURFACE-MOUNTED, BILLET-FORMED BALL-TYPE HEADLIGHT  
MOUNT**

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## SURFACE-MOUNTED, BILLET-FORMED BALL-TYPE HEADLIGHT MOUNT

### BACKGROUND OF THE INVENTION

#### 1. Field of the Invention

This invention relates generally to vehicle lighting devices and, more specifically, to a Surface-Mounted, Billet-Formed Ball-Type Headlight Mount.

#### 2. Description of Related Art

Ball-mounted headlights were the standard type of headlight in most pre-1936 American cars. This design is also employed in one or more current models of Commercial Semi-trailer Tractor Trucks. The conventional design for these assemblies is depicted in Figure 1. Figure 1 is a perspective view of a conventional ball-mounted headlight assembly 10. The major components of the conventional assembly 10 consist of a metal housing 12, inside of which is located a light or lamp 14 (e.g. sealed beam type). The assembly 10 is attached to the main body or frame of the vehicle by engagement between a threaded stud 18 and nut 22 (i.e. through a hole in the body or frame of the vehicle). The stud 18 extends downwardly (in this view) from a ball dome 16, and through an aperture (not shown) formed in a socket ring 20 cooperatively formed to accept the ball dome 16. The conventional ball dome 16 is formed from a piece of sheet metal, and is attached to the housing 12 by a plurality of rivets 17 (or other suitable fasteners). It is the

elimination of these visible rivets 17 that is one of the objectives of the present invention.

If we turn to Figures 2A and 2B, we can examine the specifics design aspects of the present invention.

Figure 2A is a perspective view of a conventional ball dome assembly 27 used in  
5 the assembly 10 of Figure 1. As shown, the threaded stud 18 protrudes through a slot 26  
formed in the ball dome portion 16 of the ball dome assembly 27. The ball dome portion  
16 is raised, thereby forming a hollow cavity extending from the base 24 of the ball dome  
assembly 27. Disposed on the base 24 are typically a plurality of apertures 28 for  
accepting rivets or other suitable fasteners therethrough (see Figure 1). It should be  
10 appreciated that the slot 26 is slot-shaped such that the threaded stud 18 can be positioned  
along the length of the slot 26 for the purpose of angularly adjusting the aim of the  
headlight lamp.

Figure 2B is a perspective view of a conventional carriage bolt 19 used in the  
assembly 10 of Figure 1. As can be seen, the threaded stud 18 extends from a rectangular  
15 protrusion 23 of a round head 21 of the carriage bolt 19. The purpose of the round head 21  
is to prevent the carriage bolt 19 from slipping through the slot 26 in the ball dome portion  
16. The purpose of the rectangular protrusion 23 is to cooperate with the sides of the slot  
26 to prevent the threaded stud 18 from rotating when a nut (see Figure 1) is tightened on  
its end. If we now turn to Figure 3, we can examine how the ball dome assembly 27  
20 attaches to the conventional housing.

Figure 3 is a front view of the housing 12 of the assembly of Figure 1. The inner  
surface 31 of the housing 12 defines an internal housing chamber 34. It is within this

chamber 34 that the lamp (see Figure 1) resides when the assembly is assembled. Penetrating the inner surface 31 is a dome aperture 30 and a plurality of rivet apertures 32 disbursed therearound. As should be apparent having reviewed Figures 2 and 3, the conventional ball dome portion (see Figure 2A) protrudes through the dome aperture 30, while the base of the ball dome assembly (see Figure 2A) remains inside the internal housing chamber 34 (against the inner surface 31). The apertures (see Figure 2A) disbursed on the base (see Figure 2A) are located thereon to cooperate with the rivet apertures 32 disbursed on the housing 31, such that rivets (or other suitable fasteners) can be attached through the rivet apertures 23 and apertures formed in the base (see Figure 2A).

The problem with this prior design is one of functionality and aesthetics. First, manufacturing and strength of materials limitations limits the maximum feasible height of the ball dome using this design; because the height is limited, so therefore is the range of adjustment of the light. Second, the fasteners necessarily inserted through holes in the housing create an aesthetically displeasing outer surface on the housing assembly. What is needed, therefore, is a ball dome design that potentially has a taller profile than the conventional dome, and further one where there is no need for rivet heads or other fasteners to be visible from the outside of the assembly.

SUMMARY OF THE INVENTION

In light of the aforementioned problems associated with the prior devices, it is an object of the present invention to provide a Surface-Mounted, Billet-Formed Ball-Type

- 5 Headlight Mount. The headlight mount should include a ball dome member that attaches to the outside surface of the headlight housing. The mount should further include a plurality of attaching bolts extending outward from the inside of the housing to engage threaded apertures formed in an annular face. It is a further object that the mount include a carriage bolt having a flat-sided head.

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BRIEF DESCRIPTION OF THE DRAWINGS

The objects and features of the present invention, which are believed to be novel, are set forth with particularity in the appended claims. The present invention, both as to its organization and manner of operation, together with further objects and advantages, may best be understood by reference to the following description, taken in connection with the accompanying drawings, of which:

Figure 1 is a perspective view of a conventional ball-mounted headlight assembly;

Figures 2A and 2B are perspective views of a conventional ball dome assembly and carriage bolt used in the assembly of Figure 1;

Figure 3 is a front view of the housing of the assembly of Figure 1;

Figures 4A and 4B are perspective views of embodiments of the billet-formed ball dome and modified carriage bolt of the present invention;

Figure 5 is a partially exploded front view of the headlight assembly of the present invention; and

Figure 6 is a perspective view of the headlight assembly of Figures 4 and 5.

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DETAILED DESCRIPTION  
OF THE PREFERRED EMOBIMENTS

The following description is provided to enable any person skilled in the art  
5 to make and use the invention and sets forth the best modes contemplated by the inventors  
of carrying out their invention. Various modifications, however, will remain readily  
apparent to those skilled in the art, since the generic principles of the present invention  
have been defined herein specifically to provide an Improved Glove Dispenser.

The present invention can best be understood by initial consideration of  
10 Figures 4A and 4B. Figures 4A and 4B are perspective views of embodiments of the  
billet-formed ball dome 36 and modified carriage bolt 42 of the present invention. As  
shown in Figure 4A, this billet-formed ball dome 36 can be machined from a solid billet of  
material. Unlike the prior ball domes, this dome 36 does not include a base portion; it is  
designed to actually mount to the surface of the light housing, as discussed below in  
15 connection with Figures 5 and 6.

Cut generally in the center of the dome 36 is a slot 26; as discussed in the  
background section of this writing, this billet-formed dome 36 may have an elongated  
cylindrical portion 37 (as compared to the conventional ball dome assembly), such that the  
height of the ball dome 36 is greater than for the conventional design. Where an elongated  
20 cylindrical portion 37 is included, it is now feasible to also employ an extra-long slot 26;  
the combination of a taller ball dome 36 and a longer slot 26 will result in additional  
angular adjustment in the headlight assembly.

As shown, the billet-formed ball dome 36 is further defined by an annular face 38. This face 38 will typically have a surface contour to match the contour of the outer surface of the light housing (see Figure 5) area to which the ball dome 36 attaches. The result of this form-fitted contour is to provide a clean mating surface between the ball dome 36 and the outer surface of the housing (not shown). Disbursed around the annular face 38 are a plurality of threaded bores 40; these bores 40 are configured to engage bolts or screws that are threaded into the bores 40 outwardly from the inside of the light housing (see Figure 5).

Figure 4B depicts a modified carriage bolt 42 usable in the present invention. There are several similarities between the modified carriage bolt 42 and the conventional carriage bolt (see Figure 2B), namely, the threaded stud 18, the rectangular portion 23, and the wiring hole 43 (although this feature was not discussed in Figure 2B). What is different in this bolt 42 as compared with the prior bolt, is the shape of the head; in this embodiment, the a flat-sided head 44 is used. The benefit of the flat-sided head 44 is that it will function to retain the bolt 42 within the slot 26 when the head 44 is turned such that the long ends 45A and 45B are transverse to the slot (see Figure 4A). When the bolt 42 is turned ninety (90) degrees, however, the long ends 45A and 45B will align with the slot (see Figure 4A), and the head 44 of the bolt 42 will be permitted to slip through the slot (see Figure 4A). The practical effect of this functionality is that the bolt 42 can be inserted and removed from outside of the ball dome (see Figure 4A), rather than needing to be inserted from the inside of the light housing (see Figures 2 and 3); the bolt 42 can be installed and/or replaced on the light housing (see Figure 5) without the need to remove the



lamp (see Figure 6) from inside the housing. If we now turn to Figure 5, we can examine how the device of the present invention is assembled.

Figure 5 is a partially exploded front view of the headlight assembly 11 of the present invention. As shown, the billet-formed ball dome 36 mounts to the outer surface 50 of the housing 12A. To attach the dome 36, it is placed against the outer surface 50, such that the threaded bores 40 are aligned with the corresponding mounting bolt apertures 48 formed in the inner surface 31 of the housing 12A. A corresponding number of mounting screws or bolts 52 are then inserted through the mounting bolt apertures 48 and then threadedly engaged with the threaded bores 40 in the dome 36. Also penetrating the housing 12A is a wiring aperture 46; the wiring aperture 46 is provided to permit the electrical wiring to pass through the dome 36 and into the housing interior 34. In some embodiments, a rubber grommet (not shown) might be used to create a substantially liquid-tight seal between the wiring (not shown), the wiring aperture, and the grommet (not shown). Furthermore, the grommet (not shown) will prevent chafing between the wiring (not shown) and the metal housing 12A; this serves to prevent electrical shorting and electrical failure. If we finally turn to Figure 6, we can examine the improved appearance of the design of this assembly.

Figure 6 is a perspective view of the headlight assembly 11 of Figures 4 and 5. As can be seen, the billet-formed dome 36 mounts to the outer surface 50 of the housing 12A, without the need for externally-protruding fasteners. The result is a very sleek, aesthetically pleasing shape. Furthermore, and as discussed earlier, once the dome 36 is attached to the housing 12A and the wiring 54 is threaded out through the slot 26 and

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